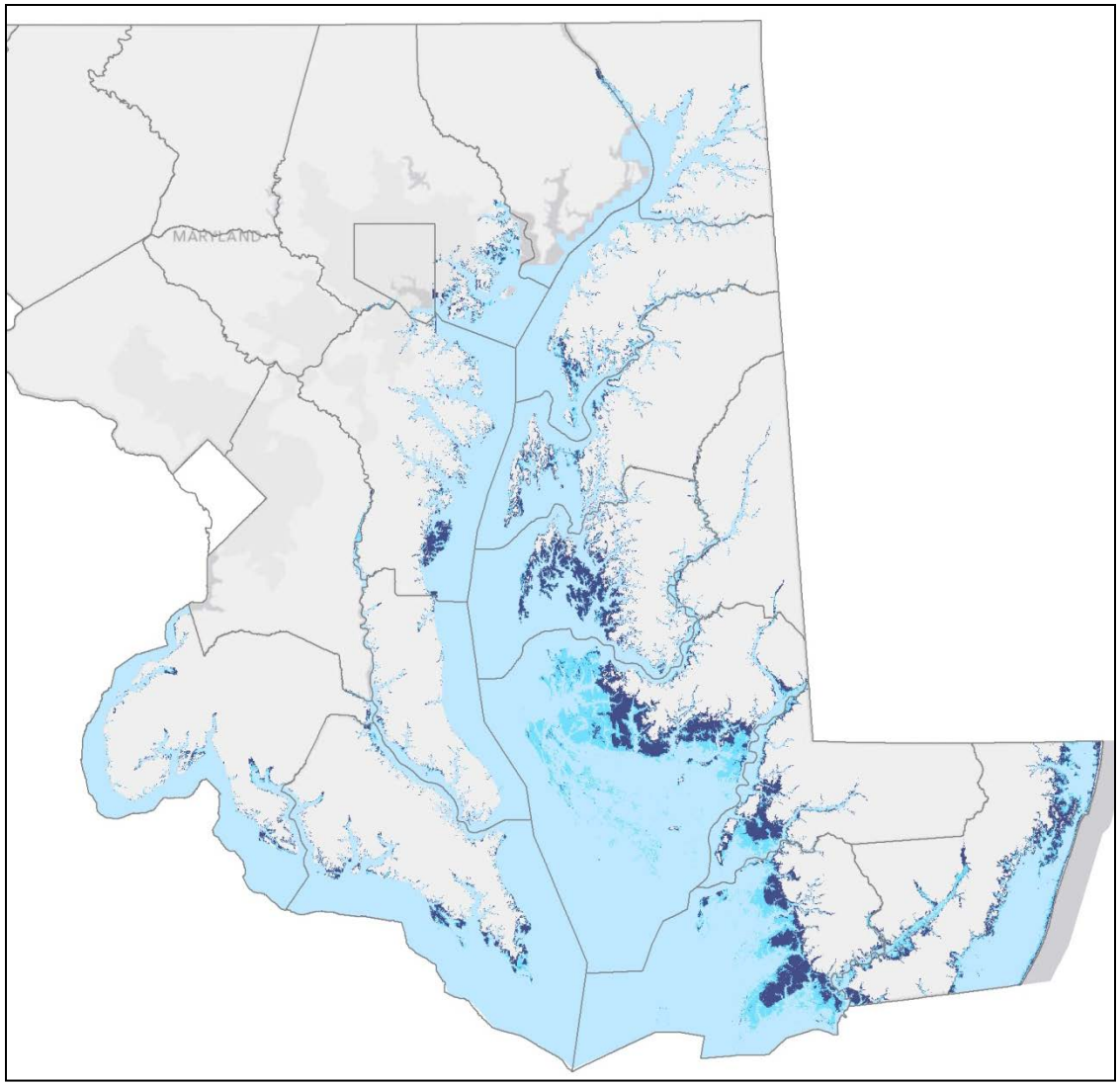
Putting Climate Adaptation Plans into Action

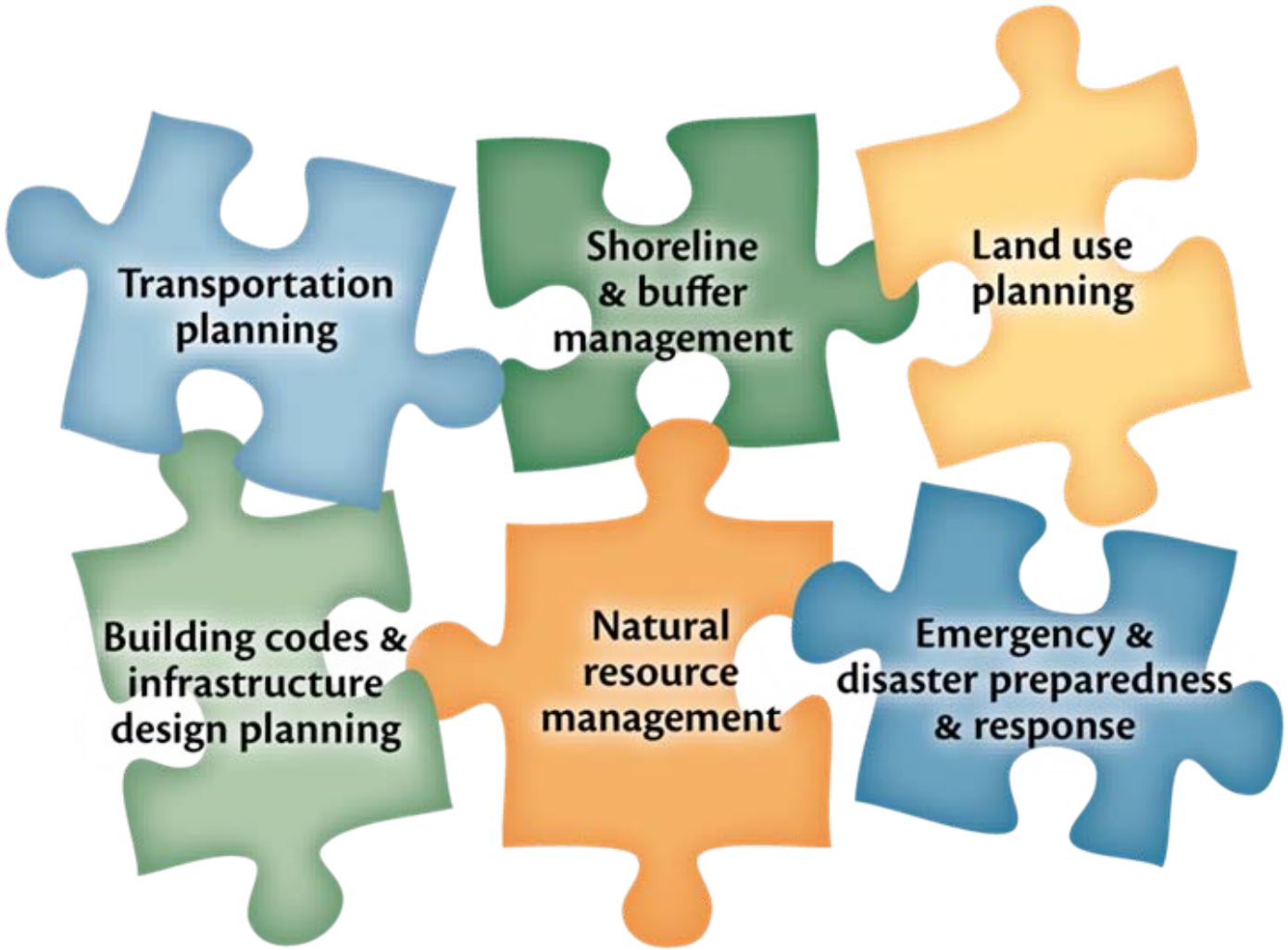
Development of land, resource and infrastructure investment policies to reduce risk

Sea Level Rise Vulnerable Areas

- 0-2 Foot Inundation Areas
- 2-5 Foot Inundation Areas
- 5-10 Foot Inundation Areas



Climate Change Adaptation: An Integrated Approach



State Infrastructure Investment Policy

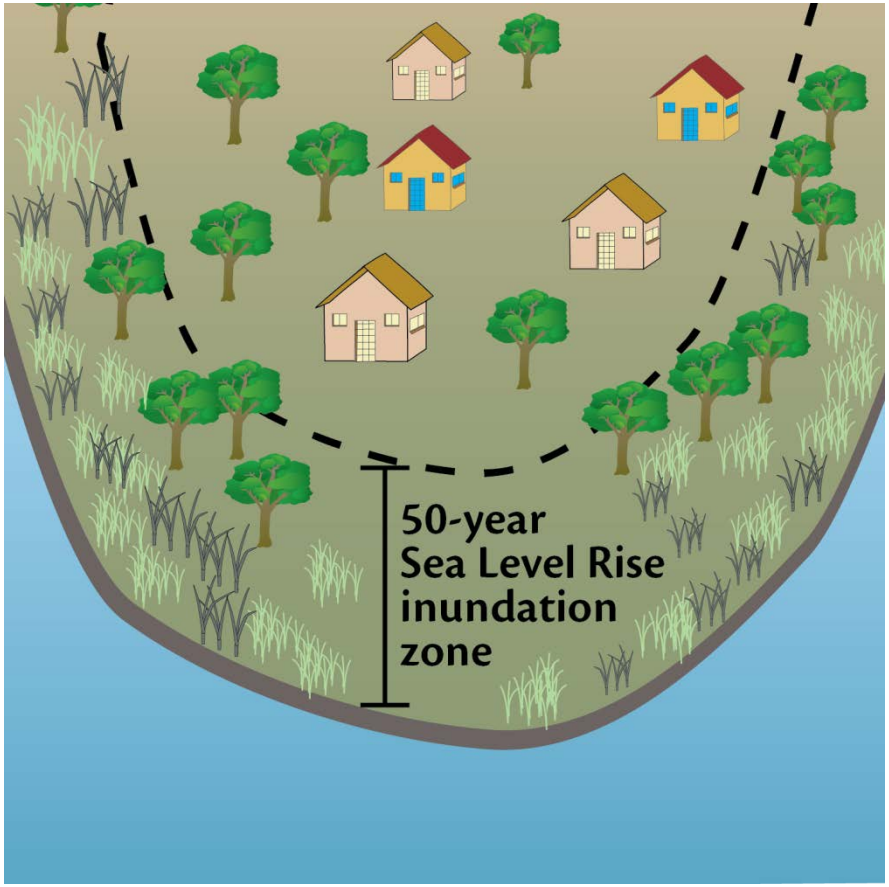
Climate Change & "Coast Smart" Construction
Executive Order 01.01.2012.29

- State agencies proposing capital projects for new or reconstructed state structures shall consider the risk of coastal flooding and sea level rise to the project and should site and design structures to avoid or minimize damage.

- State agencies shall plan construction and reconstruction of state structures located in Special Flood Hazard Areas with a minimum of two (2) feet above the 100-year base flood elevation.

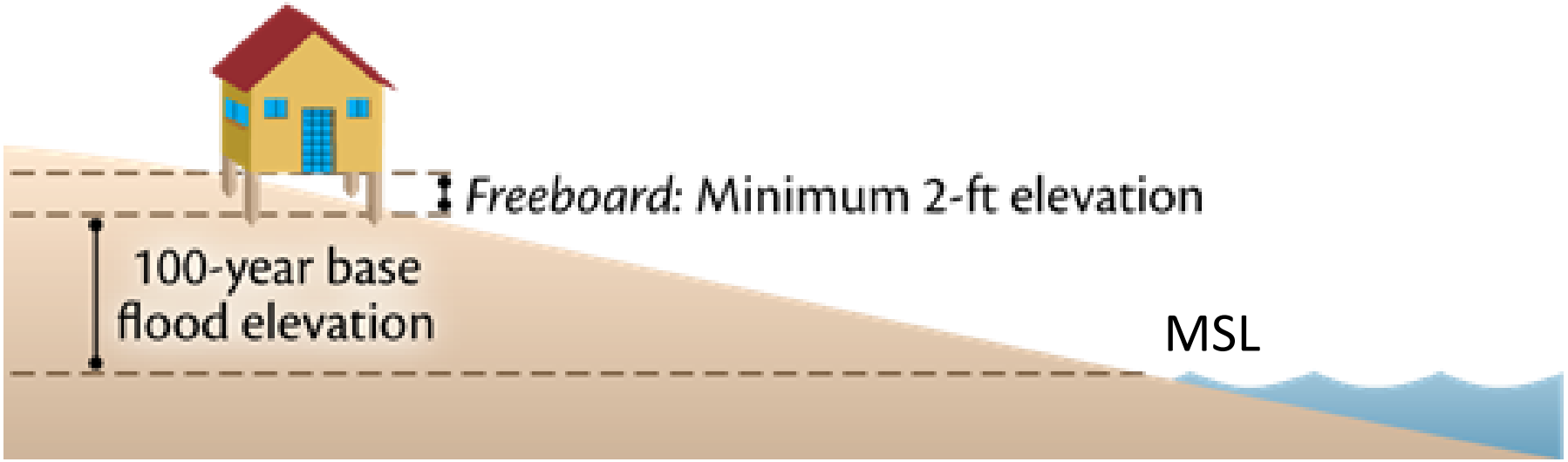
- DNR in consultation with the Maryland Commission on Climate Change and other relevant parties shall develop recommendations for:
  - Additional siting and design of new and reconstructed state structures, as well as other infrastructure improvements.
  - Application of "Coast Smart" guidelines to non-state infrastructure projects that are partially or fully funded by State agencies.

Siting Criteria: Where to Build?



Example: Site new structures outside areas likely to be inundated by sea-level rise within a 50-year time horizon

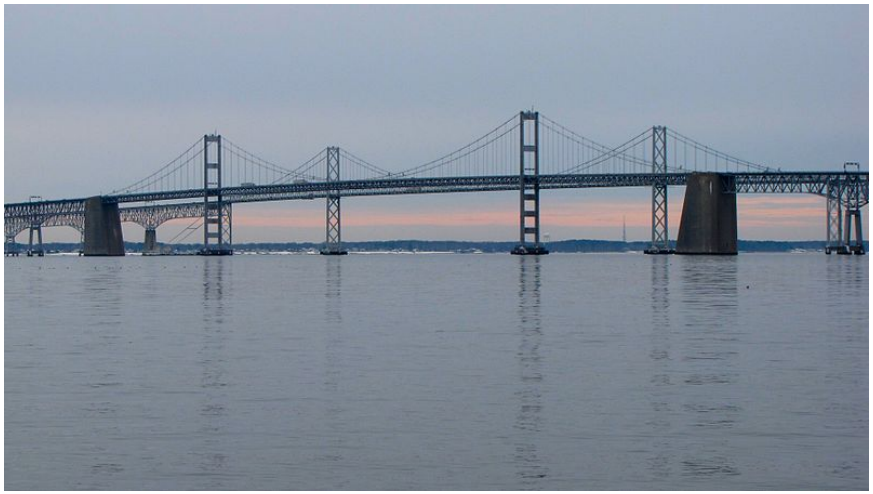
Design Standards: How to Build?



Example: Elevate new and/or replacement structures 2+ feet above the current 100-year base flood elevation

Applicability: What Project Type?

- Project Type
  - Structures
  - Other Infrastructure (e.g., roads, bridges, sewer and water systems, drainage systems, and essential public utilities)
- New Construction
- Existing Infrastructure
  - Reconstruction or rehabilitation of substantially damaged infrastructure
- Threshold Qualifications
  - Size (square footage)
  - Construction Cost (dollar value)
  - Design Life (life expectancy of structure in relation to anticipated sea level rise)
- Use-based qualifiers (e.g., critical facilities, water-dependent, historic properties)



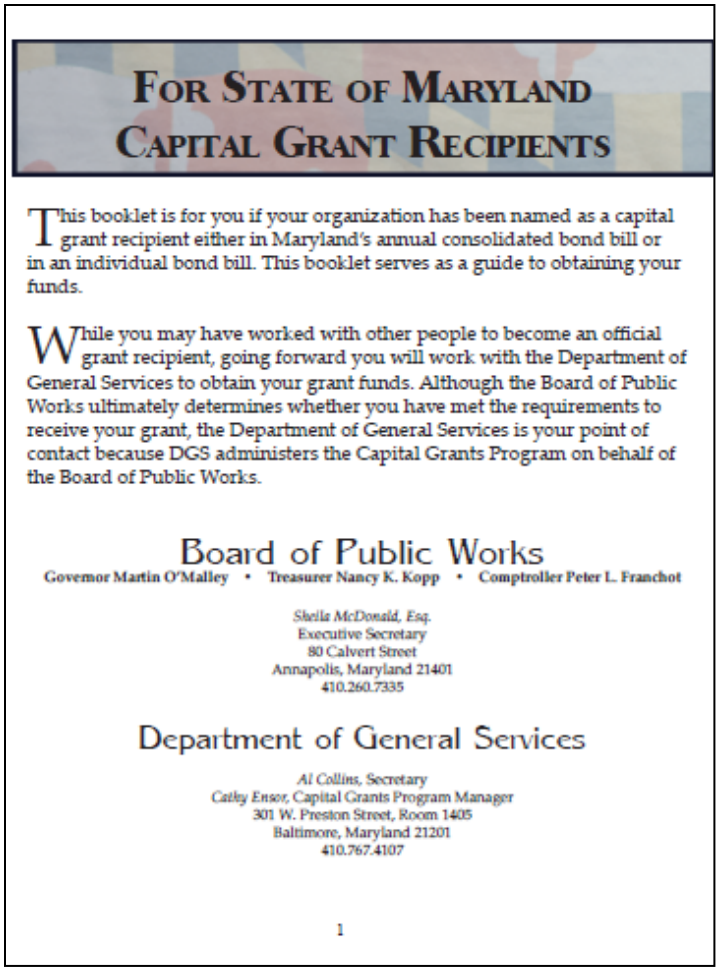
Methodology: How to Implement?

- Review Process
  - Vulnerability /impact assessment (structural and operational)
  - Analytical qualifiers (e.g., cost-benefit analysis, risk analysis, risk tolerance threshold)
  - Review authority

- Technical Tools and Guidance
  - Updated Sea Level Rise projections
  - Data and mapping applications
  - Site and design plan specifications

Institutionalization: How to Formalize?

- **State Policy and Programs**
  - DGS Policies and Procedural Manual for A&E
  - MDOT Construction Manual
  - UMD Construction Manual
  - Plan Maryland
- **State Grant Programs**
  - Capital Grant Program
  - **Community Development Block Grants**
  - Bay Restoration Trust Fund
  - Transportation Trust Fund
  - **Sustainable Communities Grant**
- **Timing/Phasing**
  - Recommendations for how to implement new review criteria for projects already in the state planning pipeline
- **New administrative, executive and/or legislative actions**



FOR STATE OF MARYLAND
CAPITAL GRANT RECIPIENTS

This booklet is for you if your organization has been named as a capital grant recipient either in Maryland's annual consolidated bond bill or in an individual bond bill. This booklet serves as a guide to obtaining your funds.

While you may have worked with other people to become an official grant recipient, going forward you will work with the Department of General Services to obtain your grant funds. Although the Board of Public Works ultimately determines whether you have met the requirements to receive your grant, the Department of General Services is your point of contact because DGS administers the Capital Grants Program on behalf of the Board of Public Works.

Board of Public Works
Governor Martin O'Malley • Treasurer Nancy K. Kopp • Comptroller Peter L. Franchot

Sheila McDonald, Esq.
Executive Secretary
80 Calvert Street
Annapolis, Maryland 21401
410.260.7335

Department of General Services

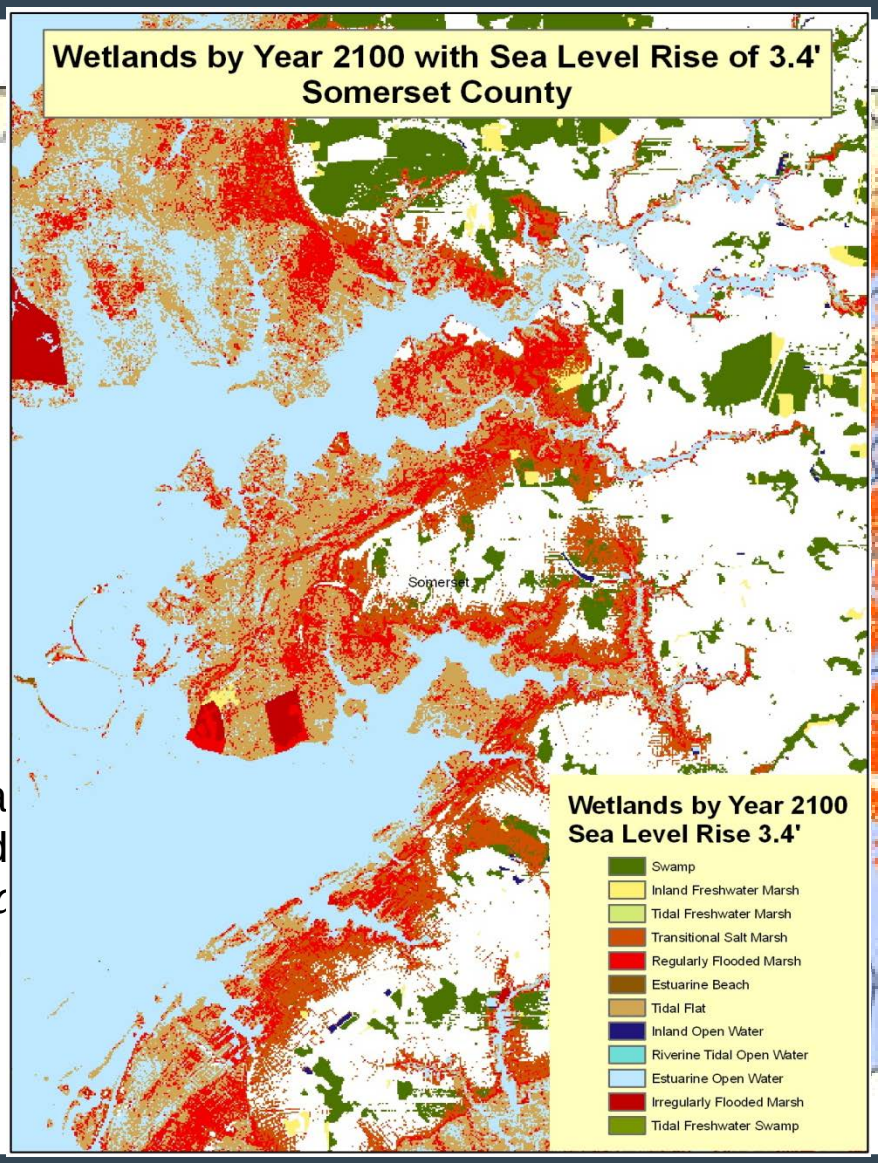
Al Collins, Secretary
Cathy Ensor, Capital Grants Program Manager
301 W. Preston Street, Room 1405
Baltimore, Maryland 21201
410.767.4107

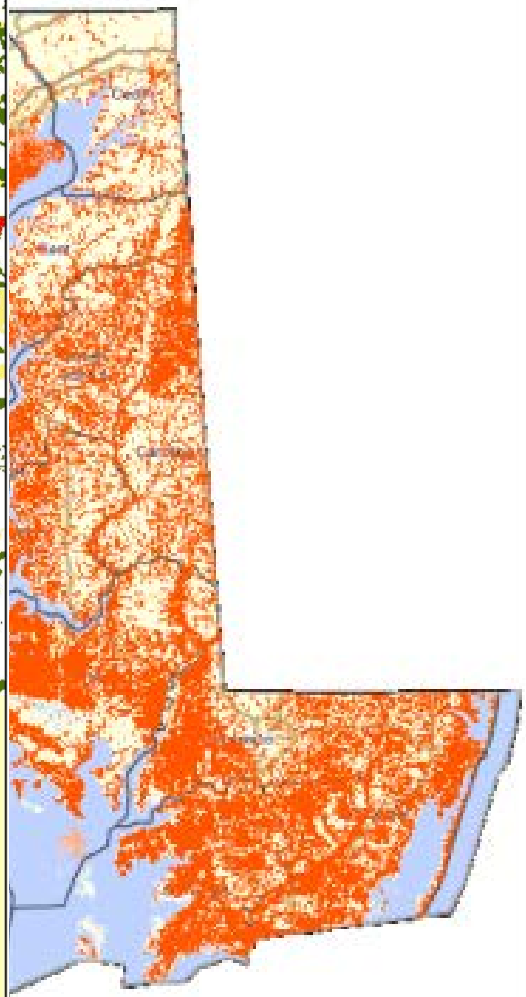
1

State Land Investment Policy

- *Greenprint* Targeted Ecological Area 2011 Update
  - Addition of “wetland adaptation areas”
  - Removal of lands less than 2 feet above Mean Sea Level
- Program Open Space Model Easement Language
  - Inclusion of Climate Change Adaptation (restrictive and affirmative) and Mitigation model language
- *Community Connections Program*
  - Incorporates Climate Change Scoring Criteria

Wetland Adaptation Areas



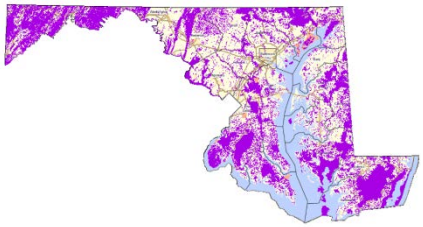


As sea level rises, wetla
coastline will move land
This map of *Wetland Ad*
identifies areas likely to
wetland habitats.

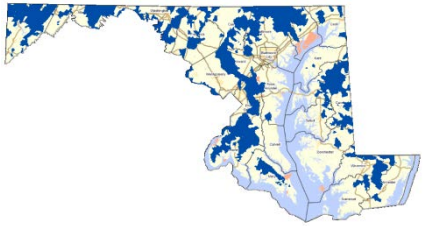
2011 Targeted Ecological Areas
Best of the Best

Green Infrastructure and Important Forests

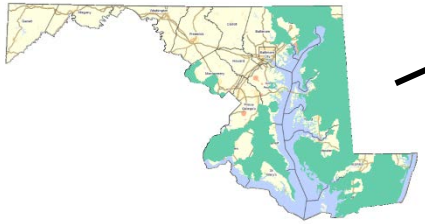
Wildlife and Rare Species Habitat

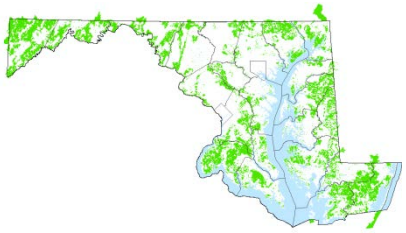


Non-tidal Streams and Fisheries



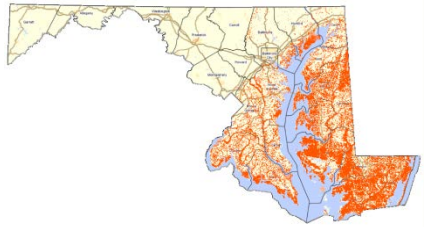
Tidal Fisheries, Bay and Coastal Ecosystems

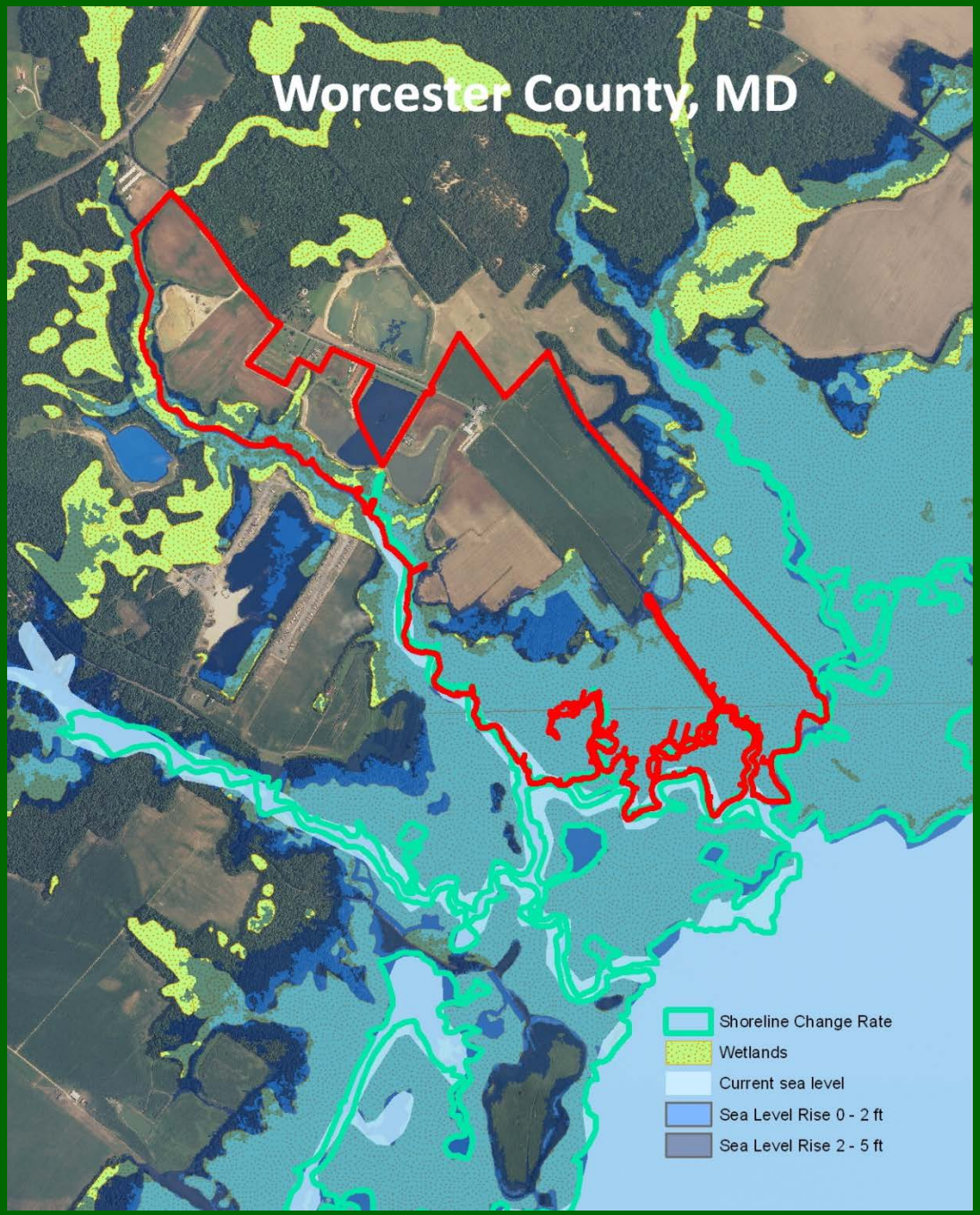




Targeted Ecological Areas

Wetland Adaptation Areas





Sea Level Rise Scenarios

- 0-2 feet
- 2-5 feet

Blue & Green Infrastructure Priorities

Habitat Migration Potential

- SLAMM output
- hardened shorelines
- bank slope
- impervious surfaces
- waterway obstructions

Mitigation/Restoration Potential

- carbon sequestration
- increasing the carbon sink

Storm Surge Protection

- wetlands presence/absence
- erosion
- proximity to adjacent protected lands or communities

POS Model Conservation Easement

Restrictions - In Perpetuity

- Use Restrictions (residential, commercial, industrial)
- Wetland Restrictions (no filling, diking, etc.)
- Buffer Maintenance (no development in 100 foot vegetative buffers)
- Impervious surface limitations (1-4%)

Affirmative Requirements

1. **Shoreline and Buffer Area Management** - Specify erosion control and/or storm surge buffer maintenance. Living Shoreline requirement.
2. **Ecosystem Resiliency** - Identify wetland/habitat restoration activities or designate migration corridors and migration assistance measures.
3. **Sensitive Habitat Protection** - Outline protection of riparian areas, endangered or threatened species habitat, steep slopes, etc.
4. **Invasive Species Management** - Detail measures to manage and control invasive and non-native species and plants on site.
5. **Nutrient Management** - Require best management practices to reduce nutrient/sediment loads in agricultural areas subject to inundation.
6. **Environmental Hazard Management** - Specify removal of septic systems, fuel tanks, or building debris. Compliance with "Coast Smart" construction codes.
7. **Historical/Cultural Preservation** - Outline a plan for the documentation of resources at risk, protection/relocation of familial burial grounds, archaeological sites, etc.

Community Connections

Community Connections Scorecard		
LM: Land Management	**Total Possible Points =**	**30**
LM.1 - Protects management intent of the public land unit		15
LM.2 - Leverages federal funding priorities		4
LM.3 - Provides landscape protection by building on existing protection		3
LM.4 - Prevents sprawl in support of growth management or conservation plan		3
LM.5 - Supports highest level of land and facility environmental BMP implementation		3
LM.6 - Designated to host environmental research or monitoring programs		1
LM.7 - Re-uses existing structures to enhance management and public benefits		1
MO: Marylanders Outside	**Total Possible Points =**	**20**
Boating, Fishing and Trail Access		
MO.1 - Provides boating access		3
MO.2 - Provides access to stocked and managed fishing areas and/or hunting opportunities		3
MO.3- Implements a trail plan		3
Children in Nature		
MO.4 - Provides access to nature by youth		3
MO.5 - Provides environmental education opportunities		3
MO.6 - Provides opportunities to create nature play spaces (public only)		1
Connecting Communities to Nature		
MO.7 - Provides natural resource based outdoor recreation for underserved groups		2
MO.8 - Offers community access to nature by being close to schools, parks, jobs and shopping		2
CECH: Community Empowerment and Cultural Heritage	**Total Possible Points =**	**20**
CECH.1 - Implements documented community preservation objectives		3
CECH.2 - Community is directly involved in operations and management of project		3
CECH.3 - Protects designated or recognized community, historic or cultural resource		3
CECH.4 - Preserves "sense of place" reflective of Cultural Heritage (landscapes, trails, heritage areas)		3
CECH.5 - Programs and/or materials demonstrate culture, history, art, music, other heritage elements		3
CECH.6 - Project provides a community service (CSA, Internships, apprenticeships)		3
CECH.7 - Creates partnerships		2
RWIP: Restoration and State WIP Credits	**Total Possible Points =**	**15**
RWIP.1 - Acres of opportunity (low = 0-5 acres, med = 5-25 acres, high = >25)		5
RWIP.2 - Project provides GreenPrint and WIP ecological and water quality benefits		4
RWIP.3 - Restoration plan developed or registered as a Natural Filters site		2
RWIP.4 - Funding Partners identified		2
RWIP.5 - Project within Bay watershed		1
RWIP.6 - Project within high WIP credit demand area (central MD counties/ME2 eligible)		1
GE: Green Economy	**Total Possible Points =**	**15**
GE.1 - Provides jobs and workforce transition		5
GE.2 - Supports & enhances local economy through natural resource based means		4
GE.3 - Supports renewable resource energy production		3
GE.4 - Supports ecosystem service valuation, markets and ME2 mitigation banks		3
PH: Public Health	**Total Possible Points =**	**10**
PH.1 - Protects drinking water supplies		3
PH.2 - Supports local production and consumption of food		3
PH.3 - Improves food production security through pollination services		2
PH.4 - Offers healthy lifestyle programs to the public		2
CC: Climate Change	**Total Possible Points =**	**10**
CC.1 - Protects existing features that provide climate change resilience		4
CC.2 - Site to be used for on-the-ground adaptation to climate change		3
CC.3 - Restoration projects enhance climate change resilience		3
Total Score		**120**

CC: Climate Change		
Benefit		
Support community resilience to climate change, reduce greenhouse gas emissions and prepare communities for the likely physical, environmental and socio-economic consequences of climate change.		
Criteria	**Factors to Consider**	**Total Possible Points**
CC.1 - Protects key landscape/site level characteristics that provide climate change resilience	**Adaptation Benefits** (2 pts.): Existing landscape features on the site provide for: 1) community storm surge protection (i.e., bay island, vegetated buffers, tidal wetlands); or 2) protection of existing urban tree canopy.	**4**
	Mitigation Benefits (2 pts.): Existing landscape features and land management practices, such as wetlands, sustainably managed forests and soils, are actively storing carbon.	
CC.2 - Site to be used for on-the-ground adaptation to climate change	**Adaptation Benefits** (3 pts.): Management intent/use for the site will: 1) maintain or replace public access lost due to sea level rise; 2) protect historic/cultural resources vulnerable to sea level rise; and 3) assist with facilitiating planned abandonement or retreat of vulnerable coastal areas.	**3**
CC.3 - Restoration of a site to enhance climate change resilience	**Adaptation Benefit** (3 pts.): Restoration projects that will: 1) Increase storm surge buffers, including forest, wetland and/or bay island restoration or beach replenishment; 2) Provide shoreline or stream stabilization benefits through living shoreline or natural channel design practices; 3) Protect against future coastal hazard water quality contamination (i.e., site reclamation to remove facilities/structures within a 50-year sea level rise inundation zone); 4) Increase urban tree canopy; and 5) Restoration plan incorporates future climate variables in siting and design decisions (selecting plantings appropriate for future temperature, drought, salinity, water level, etc, and implementing practices within climate change habitat targets).	**3**
	Total Score	**10**

State growth policy

Areas of Special Designation:

Climate Change Impact Areas

- Sea Level Rise Vulnerability
- Erosion Vulnerability
- Wetland Adaptation Areas
- Storm Surge Risk
- 100 and 500-Year Floodplain
- Drought Hazard Risk
- Wildfire Priority Risk
- High Quality Cold Water Resource Areas
- Climate Sensitive Wildlife and Rare Species Habitats (coming soon)

http://maryland.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=9ac089621ff247d8b9411554b5edf66f

Questions?

http://www.dnr.state.md.us/climatechange

MARYLAND DEPARTMENT OF NATURAL RESOURCES

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